possible to use a common rail **59** of relatively small size, as it need only be charged with fuel at the first, moderate pressure level due to the provision of the pump arrangement **63** and the rail control valve **62** which permit an increased pressure level to be supplied to the injector **50** when the rail control valve **62** is closed. By way of example, the moderate pressure of fuel within the rail may be around 300 bar, compared with pressures around 2000 bar in known common rail systems. As the common rail **59** may be of relatively small size, it is possible to house the rail **59** within another component of the engine.

[0168] In an alternative configuration to that shown in **FIG. 15**, the shaft **134** may be the engine rocker shaft and may be hollow so that the rail may extend through a region of the hollow shaft. As a further alternative the rail may be provided within a region of an engine cylinder head.

[0169] It will be appreciated that the fuel injection system of any of the embodiments described previously, and not just that in FIGS. **3** to **5**, may be implemented as in **FIG. 15**.

[0170] Obviously, many modifications and variations of the present invention are possible in light of the above teachings. The invention may be practiced otherwise than as specifically described within the scope of the appended claims.

What is claimed is:

1. A fuel injection system for supplying pressurised fuel to a fuel injector, the fuel injection system comprising:

an accumulator volume for supplying fuel at a first injectable pressure level to the fuel injector through a fuel supply passage;

a pump arrangement for increasing the pressure of fuel supplied to the injector to a second injectable pressure level; and

a valve arrangement operable between a first position in which fuel at the first injectable pressure level is supplied to the injector and a second position in which communication between the injector and the accumulator volume is broken so as to permit fuel at the second injectable pressure to be supplied to the injector.

2. The fuel injection system as claimed in claim 1, wherein the pump arrangement and the injector are combined in a common unit.

3. The fuel injection system as claimed in claim 1, wherein the pump arrangement includes a pump chamber defined within a plunger bore, and a plunger which is movable within the plunger bore to cause pressurisation of fuel within the pump chamber when the valve arrangement is in the second position.

4. The fuel injection system as claimed in claim 3, wherein the pump arrangement includes a cam drive arrangement having a cam for imparting drive to the plunger.

5. The fuel injection system as claimed in claim 4, wherein the cam includes a first cam lobe and at least one further cam lobe, whereby the first cam lobe effects pressurisation of fuel within the pump chamber to the second pressure level during at least a part of a first pumping stroke of the plunger, and a further one of the lobes effects pressurisation of fuel within the pump chamber to the first pressure level during a further pumping stroke of the plunger.

6. The fuel injection system as claimed in claim 4, including a plurality of injectors, each having an associated pumping plunger for performing a pumping stroke and a return stroke, and whereby each of said plungers is driven by means of an associated cam that is oriented relative to the or each of the other cams and has a surface shaped such that the associated return stroke is interrupted to define at least one step of plunger movement that is substantially synchronous with the pumping stroke of one of the other plungers.

7. The fuel injection system as claimed in claim 6, wherein each cam surface is shaped to include a rising flank, and wherein the remainder of the cam surface includes a surface irregularity which serves to define an interval of interruption in the return stroke of the associated plunger.

8. The fuel injection system as claimed in claim 6, wherein each cam is driven by means of a shaft, in use, and wherein each cam surface is shaped to define a number of steps of movement through the associated return stroke that is equal to the number of other cams driven by the same shaft.

9. The fuel injection system as claimed in claim 1, wherein the valve arrangement includes a valve for controlling communication between the pump arrangement and the accumulator volume.

10. The fuel injection system as claimed in claim 1, wherein the valve arrangement includes an electrically operable valve member which is movable between its first and second positions by application of an electronic control signal.

11. The fuel injection system as claimed in claim 1, wherein the valve arrangement includes a three-position valve that is operable between the first and second positions and a further, third position in which the pump arrangement communicates with a low pressure drain, thereby to permit spill-end of injection.

12. The fuel injection system as claimed in claim 11, wherein the three-position valve includes an inner valve member and an outer valve member, and associated inner and outer valve spring arrangements, whereby movement of the inner and outer valve members is effected by means of a winding of an electromagnetic actuator.

13. The fuel injection system as claimed in claim 12, wherein the outer valve member is coupled to an armature of the actuator, said outer valve member being movable relative to the inner valve member and being movable into engagement with a first valve seating defined by the inner valve member upon energisation of the winding to a first energisation level, thereby to move the valve arrangement into the third position, said movement of the outer valve member being coupled to the inner valve member to move the valve arrangement into the second position upon energisation of the winding to a second energisation level.

14. The fuel injection system as claimed in claim 9, further comprising a high pressure fuel pump for supplying fuel at the first injectable pressure level to the accumulator volume.

15. The fuel injection system as claimed in claim 1, wherein the pump arrangement is operable to supply pressurised fuel, at the first injectable pressure level to the accumulator volume.

16. The fuel injection system as claimed in claim 15, wherein the valve arrangement further includes an additional valve for controlling a supply of fuel at relatively low pressure to the pump arrangement.